UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/263,689 | 03/05/1999 | JIAN NI | 1488.0560002 | 2137 |

7590 11/01/2007

STERNE KESSLER GOLDSTEIN & FOX
1100 NEW YORK AVENUE N W
SUITE 600
WASHINGTON, DC 200053934

| EXAMINER | |
|---|---|
| CANELLA, KAREN A | |
| **ART UNIT** | **PAPER NUMBER** |
| 1643 | |
| **MAIL DATE** | **DELIVERY MODE** |
| 11/01/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/263,689 | NI ET AL. | |
| | Examiner | Art Unit | |
| | Karen A. Canella | 1643 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☐ Claim(s) *141-144,146-168 and 170-172* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *141-144, 146-168 and 170-172* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

Claim 169 has been canceled. Claims 141-144, 146-168 and 170-172 are pending and under consideration.

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The rejection of claims 141-144, 146-168 and 170-172 under 35 U.S.C. 101 is maintained for reasons of record, because the claimed invention is not supported by either a specific, substantial asserted utility or a well-established utility. The instant invention is drawn to the protein of SEQ ID NO:4 and fragments of SEQ ID NO:4 which consist of at least 30 or 50 contiguous amino acid sequence of SEQ ID NO:4 as well as specific antigenic fragments of SEQ ID NO:4, predicted by the specification to have antigenic activity such as residues 62-102 of SEQ ID NO:4, residues 226-259 of SEQ ID NO:4 and residues 197-308 of SEQ ID NO:4. The specification identifies SEQ ID NO:4 as belonging to the Galectin family of proteins recognized to have the ability to bind beta-galactoside in a calcium-independent manner. The art teaches that members of this class are distinguished from other lectins by the presence of a conserved carbohydrate recognition domain. The instant specification lacks a specific , substantial asserted utility because it fails to provide for a non-ambiguous usage of the claimed protein. On page 27, lines 20-25, the specification states

*It is believed that certain tissues in mammals with certain diseases (cancer, autoimmune diseases, inflammatory diseases, asthma, and allergic diseases) express significantly altered (enhanced or decreased) levels of the galectin 8, 9, 10, or 10SV protein and mRNA encoding the galectin 8, 9, 10, or 10SV protein when compared to a corresponding "standard" mammal, i.e., a mammal of the same species not having the disease.*

It is noted with particular emphasis that the specification fails to assert if the claimed protein is over-expressed or under-expressed in any of the stated diseases. Because of this defect the stated utility is neither specific nor substantial because the condition of perhaps being over expressed or perhaps being under-expressed does not provide for a specific, substantial assertion.

It is further noted that the specification contemplates on page 29, lines 3-5,

*The present invention is useful for detecting diseases in mammals (for example, cancer, autoimmune diseases, inflammatory diseases, asthma, and allergic diseases)*, and on page 30, lines 14-18,

*The ability of galectin 8, 9, 10, or 10SV to modulate growth regulatory activity may be therapeutically valuable in the treatment of clinical manifestations of such cell regulatory disorders. Disorders which can be treated include, but should not be limited to, autoimmune disease, cancer (preferably, melanoma, renal, astrocytoma, and Hodgkin disease), inflammatory disease, wound healing, arteriosclerosis, other heart diseases, microbe infection (virus, fungal, bacterial, and parasite), asthma, and allergic diseases.*

However, no further information is given with regard to detecting an over expression or an under expression of SEQ ID NO:4 for the detection of cancer, autoimmune diseases, inflammatory diseases, asthma, and allergic diseases in mammal and no further information is given with regard to the need to decrease or increase the level of SEQ ID NO:4 for the treatment of autoimmune disease, cancer, inflammatory disease, wound healing, arteriosclerosis, other heart diseases, microbe infection , asthma, and allergic diseases. Further, as stated in the Office action of February 1, 2001 (page 4, line 15 to page 5, line 2), membership in the family of galectins does not confer a specific substantial utility to the instant SEQ ID NO:4 because the family encompasses proteins having widely different functions. Further, the ability to bind beta-galactoside in a calcium-independent manner does not provide a specific, substantial utility because that property is shared by numerous proteins of the galectin family, which as stated above, have widely differing functional attributes. It is therefore concluded that the instant specification lacks a specific, substantial and asserted utility for SEQ ID NO:4.

Applicant argues that the test for specificity is whether an asserted utility is specific to the subject matter claimed, and that the specifications allegations that the protein of the invention can be used to treat asthma is specific because not every protein can be used thus. This has been considered but not found persuasive. The specification fails to assert how the instant protein impacts on the disease of asthma, i.e. whether it is overactive, under active, ectopically expressed or a dominant negative influence. Thus, there is no assertion that the protein in the invention can be "used" to treat asthma as in the administration of said protein, which would be dictated in order to make up for an under expression of said protein. The specification fails to assert that asthma can be treated by increasing the level of said protein in the patient. the specification states only that the protein could be enhanced or decreased in diseases such as asthma. If the protein or protein activity were in fact increased or ectopically expressed in asthma, then it would be expected that administration of the claimed protein would not be therapeutic.

Applicant argues that an assertion of utility creates a presumption of said utility. this is correct, but for the reasons set forth above, the specification is defective in the assertion of utility and therefore there is no presumption. Applicant states that it is the burden on the Examiner to establish why it is more likely than not that one of ordinary skill in the art would doubt the truth of the statement of utility in the disclosure. As stated before, the specification fails to provide the assertion of utility. The applicant further argues that the prima facie case must contain an explanation that clearly sets forth the reasoning used in concluding that the asserted utility for the claimed invention is not specific, substantial and credible; support for factual findings relied upon in reaching a conclusion and an evaluation of all relevant evidence of record including utilities taught by the nearest prior art. This has been considered and not found to be persuasive. applicant is again referred to the reasons of record above:

*As stated in the Office action of February 1, 2001 (page 4, line 15 to page 5, line 2), membership in the family of galectins does not confer a specific substantial utility to the instant SEQ ID NO:4 because the family encompasses proteins having widely different functions. Further, the ability to bind beta-galactoside in a calcium-independent manner does not provide a specific, substantial utility because that property is shared by numerous proteins of the galectin family, which as stated above, have widely differing functional attributes. It is therefore*

*concluded that the instant specification lacks a specific, substantial and asserted utility for SEQ ID NO:4.*

Applicant again argues that none of the reasons of record demonstrate why a person of ordinary skill would not believe applicants assertion of utility. Applicant is again reminded that the specification lacks such as assertion because

*The instant specification lacks a specific , substantial asserted utility because it fails to provide for a non-ambiguous usage of the claimed protein. On page 27, lines 20-25, the specification states*

*It is believed that certain tissues in mammals with certain diseases (cancer, autoimmune diseases, inflammatory diseases, asthma, and allergic diseases) express significantly altered (enhanced or decreased) levels of the galectin 8, 9, 10, or 10SV protein and mRNA encoding the galectin 8, 9, 10, or 10SV protein when compared to a corresponding "standard" mammal, i.e., a mammal of the same species not having the disease.*

Applicants argue that the Federal circuit held in In re Branan that evidence after the filing date can be used to substantiate any doubts as to the asserted utility since this pertains to the accuracy of a statement already in the specification. This has been considered but not found to be applicable to the instant fact patter because the assertion that the protein of the instant invention is over expressed, overactive or ectopically expressed in asthma is not present in the instant specification. therefore the post-filing art cannot be relied upon to corroborate the accuracy of such a utility.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The rejection of Claims 141-144, 146-168 and 170-172 under 35 U.S.C. 112, first paragraph is maintained for reasons of record, because the claimed invention is not supported by either a specific, substantial and credible asserted utility or a well established utility for the reasons set forth above, and one skilled in the art clearly would not know how to use the claimed invention is therefore maintained for reasons of record.

Applicant argues that only claims 166-172 has been previous rejected under 112, first paragraph. Applicant is referred to the Office action mailed February 23, 2007, page 4, first paragraph, wherein all of claims 141-144 and 146-172 are rejected.

The rejection of claims 141-144 and 146-172 as failing to comply with the enablement requirement, for the reasons restated below, is withdrawn.

The specification states on page 26, lines 16-19 that antigenic-epitope bearing peptides and polypeptides of the invention preferably contain a sequence of at least seven, more preferably at least nine, and most preferably between about 15 to about 30 amino acids. Claims 166 and 168-172 encompass any fragment of SEQ ID NO:4 having at least 30 contiguous amino acids of SEQ ID NO:4 without regard as to any functional characteristic of the fragment. The specification further states on page 26, line 23 that the antigenic polypeptides identified from SEQ ID NO:4 are residues 62-101, 226-259 and 197-308. Claims 166-173 read on fragments of SEQ ID NO:4 which include fragments outside of the specific regions, such as fragments taken from residues 1-61 and residues 102-198. The specification fails to teach how to use said broadly claimed fragments of SEQ ID NO:4.

It is well known in the art that polypeptides are folded 3-dimensional structures, the function and stability of which are directly related to a specific conformation (Mathews and Van Holde, Biochemistry, 1996, pp. 165-171, cited in a previous Office action). In any given polypeptide, amino acids distant from one another in the primary sequence may be closely located in the folded, 3-dimensional structure (Mathews and Van Holde, Biochemistry, 1996, pp. 166, figure 6.1). The specific conformation of a polypeptide results from non-covalent interactions between amino acids, beyond what is dictated by the primary amino acid sequence. Fragments of SEQ ID NO:4 taken out of the context of the entirety of SEQ ID NO:4 can potentially have radically altered three dimensional structure relative to the corresponding three

dimensional structure within the SEQ ID NO:4 environment (Matthews, B. "Genetic and Structural Analysis of the Protein Stability Problem", cited in a previous Office action). Thus, the consequences of the altered sequence environment cannot be predicted. Due to these reasons, one of skill in the art would be forced into undue experimentation in order to use the broadly claimed invention.

Further, it is recognized in the art (Burch WO 03/084467) that putative epitopes can be predicted using a computer to scan the sequence of a protein for amino acid sequences that contain a "motif" or a defined pattern of amino acid residues associated with a particular MHC allele, but that the vast majority of these predicted epitopes fail to be immunogenic (page 5, lines 18-21). Therefore, given the lack of teachings in the specification regarding how to use such a fragment of the claimed sequence which is not immunogenic, one of skill in the art would be subject to undue experimentation in order to use the broadly claimed fragments.

The rejection of claim 169 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 23 of U.S. Patent No. 6,027,916 is withdrawn due to cancellation of claim 169.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen A. Canella whose telephone number is (571)272-0828. The examiner can normally be reached on 10-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms can be reached on (571)272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Karen A. Canella/
Ph.D., Primary Examiner
Art Unit 1643